

## External Financing and Economic Growth in Nigeria: 1986-2017

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### ABSTRACT

External financing has become a veritable resort to remedying the common problems of low productivity, low productivity, low savings and high dependent on consumption from exports in most less developed economies. The use of external finance is believed to have the capacity to close wide gap between domestic savings and investment and provide the complementary funds to facilitate economic activities necessary for growth in Nigeria. This study aimed to investigate the effect of external financing on economic growth in Nigeria between 1986 and 2017. External financing was captured using five variables of external debt stock (EDS), foreign direct investment (FDI), official development assistance (ODA), remittance (RMT) and foreign portfolio investment (FPI), as the independent variables, regressed on economic growth represented by annual growth rate of gross domestic product (GDPR) as the dependent variable. Data for these variables were obtained from World Development Indicator, and analyzed based on the Autoregressive Distributive Lag (ARDL) approach. The findings revealed that, in the long run, EDS and FDI had a negative and a positive, significant effects, respectively, while others had no effect on growth; in the short run, all the external financing variables (EDS, FDI, FPI, ODA, and RMT) had no significant effect on economic growth in Nigeria. The study averred that FDI is a veritable source of financing that can bring about economic sustainability to Nigeria. The study recommended, among others, that government should deploy external debts for regenerative projects that will eventually liquidate themselves in the long run.

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### INTRODUCTION

One of the key macroeconomic objectives of most developing countries is the attainment of sustainable economic growth. To attain this goal, every government requires a substantial amount of external finance for economic growth and development (Umaru, 2013). A meaningful economic growth presupposes a persistent increase or rise in gross domestic product over time culminating in economic development - a status vigorously pursued by all less developed countries (LDCs), including Nigeria. Ayadi and Ayadi (2008), found that the amount of capital available in the treasury of most developing countries were grossly inadequate to meet their economic growth needs mainly due to their low productivity, low savings and high consumption pattern. Consequently governments resort to external financing to bridge the resource gap.

Developing countries are left with no options than resort to external financing and foreign assistance to bridge the saving- investment gap with the intention of achieving economic growth and poverty reduction. Among these external financing channels are Official Development Assistance (ODA), Foreign Direct Investment, Foreign Portfolio, Remittances and External Debt. ODA more commonly known as foreign aid consists of resource transfers from the public sector, in the form of grants and loans at concessional financial terms, to developing countries (Udoka & Ogege, 2012). External Debt Stock as variable in this study can be defined as the sum total of public, publicly guaranteed and private unguaranteed long

term debts, the use of IMF credit and other short-term debts. Foreign Direct Investment (FDI) is the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investors; while Foreign Portfolio Investment - otherwise often called portfolio equity comprises of net inflows from equity securities other than those recorded as FDI, which includes e shares, stock, depository receipts and direct purchase of shares in local stock markets by foreign investors. However, Remittance includes personal transfers made in cash or in kind or received by resident household (to or from) non-resident household.

The need to balance the savings-investment gap and offset fiscal deficits in developing countries over the years has continued to propel and compel their governments to source for external finance outside signorage - ways and means; domestic revenues and internal borrowing. Nigeria's economy like most highly indebted poor countries of the world is characterized by low economic growth and low per capita income, with domestic savings insufficient to meet developmental and other national goals. Her exports are primary commodities with export earnings too small to finance imports which are mostly capital intensive goods that are comparably more expensive but imperative for meaningful productive activities (Siddique, Selvanathan & Selvanathan, 2015). Compounding the problem of Nigeria's poor export earnings was her steady slide into a mono economy with the discovery of oil. The oil sector accounts for

over 75% of government revenue and constitutes the bulk of the country's export (96%) (Okonjo-Iweala, 2003). The inability/unwillingness of successive Nigerian governments since independence to diversify her revenue sources constrains her to always source for external finance to carry out its developmental projects.

This study aims to investigate the effect of various external financing variables on economic growth of Nigeria. Literature has identified five external fund inflows comprising external debt stock, foreign direct investment, official development assistance, foreign portfolio investment and remittances. The World Bank refers to external debt as all unpaid portion of external financial resources which are needed for development purposes and balance of payment support which could not be repaid as and when due (Obademi, 2013). It comprises the portion of a country's debt that was borrowed from foreign lenders including commercial banks, governments or international financial institutions (Arnone, Bandiera & Presbitero, 2005; Ajayi & Khan, 2000). Debt agreements require that the borrowers' future saving cover the interest and principal payment (debt servicing). Therefore, debt-financed investment has to be productive and well managed enough to earn a rate of return higher than the cost of debt servicing.

Official development which consists of grants plus concessional loan that have at least a 25 percent grant component is the subset of official development finance (World Bank, 1998). A loan is considered sufficiently concessional to be included in ODA if it has a grant element of at least 25%, calculated at a 10% discount rate. Broadly speaking ODA includes the costs to the donor of project and program aid, technical co-operation, forgiveness of debts not already reported as ODA, food and emergency aid, and associated administrative expenses. According to Todaro (1994) there is no historical evidence that over large periods of time donor country assist others without expecting some corresponding benefits (political, economic, military) in return. This leads to the non-achievement of objectives of foreign aid in many cases.

Despite these, an economy, like Nigeria also obtained funds for economic activities through remittances - transfers of money, goods and diverse traits by migrants or migrant groups back to their countries of origin or citizenship. The notion of remittances often conjures only monetary aspect; however, remittances embrace monetary and non-monetary flows, including social remittances. Social remittances are defined as ideas, practices, mind-sets, world views, values and attitudes, norms of behaviour and social capital (knowledge, experience and expertise) that the diasporas mediate and either consciously or unconsciously transfer from host to home communities (North-South Centre of the Council of Europe, 2006 cited in Oucho, 2008).

Attraction of investments through Foreign Direct Investment (FDI) r Foreign Portfolio Investment also aids the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investors. Summarily, a combination of FDI and FPI forms foreign private capital flows called foreign private investment. The primary distinguishing feature of an FDI is the acquisition of some degree of management control (usually, the threshold of 10 percent of total equity is used). Contrary to FDI, Portfolio Investment (PI) do generally not involve a controlling interest. PI are further split between debt and equity investments, and recently financial derivatives" has been added as part of portfolio investments.

Despite the level of inflows of funds generated from the various channels of external financing, empirical studies has produced a conflicting report on their effects on economic growth (see Table 1). However, the conflicting findings in respect of positive and negative effect of the explanatory variables on the growth nexus both in Sub-Saharan Africa and elsewhere is a source of worry and challenge especially in developing economies like Nigeria. It is the quest to effectively eliminate the gap between domestic savings and investment prompting external funding and to reconcile the conflicting results trailing similar studies over the years that gave impetus to the study of the effect of external financing on economic growth in Nigeria spanning a period of thirty-two years (1986-2017).

**Table 1: Tabular Review of empirical studies on external financing variables and economic growth nexus**

| Variables of External Financing | Adverse Effect   | Positive Effect  | No Effect   |
|---------------------------------|--|--|---|
| External debt - Growth Nexus    | <ul style="list-style-type: none"> <li>➤ Adejuwon, James &amp; Soneye (2010)</li> <li>➤ Ezeabasili, Isu &amp; Mojekwu (2011)</li> <li>➤ Ajayi &amp; Ojo (2012)</li> <li>➤ Dereje &amp; Joakim (2013)</li> <li>➤ Umaru &amp; Musa (2013)</li> <li>➤ Hélène P, &amp; Luca (2014)</li> <li>➤ Siew-Peng &amp; Yan-Ling (2015)</li> <li>➤ Worlu &amp; Emeka (2012)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Tajudeen (2012)</li> <li>➤ Uchenna &amp; Iheanachor (2013)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Ogunmuyiwa (2011)</li> <li>➤ Ibi, Egbe &amp; Aganyi (2014)</li> <li>➤ Utomi Ohunma (2014)</li> </ul> |

|  |   |  |   |
|--|---|--|---|
| Foreign Investment and Growth Nexus              | <ul style="list-style-type: none"> <li>➤ Awe (2013)</li> <li>➤ Ali (2014)</li> <li>➤ Nwosa &amp; Amassoma (2014)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Oyatoye, Arogundade, Adebisi &amp; Oluwakayode (2011)</li> <li>➤ Houssem &amp; Hichem (2011)</li> <li>➤ Okon, Augustine &amp; Chuku (2012)</li> <li>➤ Sarbapriya (2012)</li> <li>➤ Worlu &amp; Emeka (2012)</li> <li>➤ Olusanya, (2013)</li> <li>➤ Ogunleye (2014)</li> <li>➤ Otto &amp; Ukpere (2014)</li> <li>➤ Ekwe &amp; Inyama (2014)</li> <li>➤ Akanyo &amp; Ajie (2015)</li> <li>➤ Shuaib &amp; Dania (2015)</li> <li>➤ Olaleye (2015)</li> <li>➤ Nweke (2015)</li> <li>➤ Okafor, Ezeaku &amp; Eje (2015)</li> <li>➤ Akanyo &amp; Ajie (2015)</li> <li>➤ Okafor, Ezeaku &amp; Grace (2015)</li> <li>➤ Chigbu, Ubah &amp; Chigbu (2015)</li> <li>➤ Ferdaous (2016)</li> </ul> | <ul style="list-style-type: none"> <li>➤ Ugwuegbe, Modebe, Onyeonu (2014)</li> <li>➤ Korna, Ajekwe Isaac (2013)</li> <li>➤ Basem &amp; Abeer (2011)</li> <li>➤ Makori, Kagiri &amp; Ombui (2015)</li> </ul> |
| Official Development Assistance and Growth Nexus |   | <ul style="list-style-type: none"> <li>➤ Worlu &amp; Emeka (2012)</li> <li>➤ Makori, Kagiri &amp; Ombui (2015)</li> </ul>  |   |
| Foreign Portfolio Investment and Growth Nexus    |   | <ul style="list-style-type: none"> <li>➤ Okafor, Ezeaku &amp; Eje (2015)</li> <li>➤ Baghebo &amp; Apere (2014)</li> <li>➤ Omowumi (2015)</li> <li>➤ Jarita &amp; Salina (2014)</li> <li>➤ Okafor, Ezeaku &amp; Grace (2015)</li> <li>➤ Ekeocha (2008)</li> <li>➤ Paul &amp; Callistus (2016)</li> <li>➤ Nwosa &amp; Amassoma (2014)</li> <li>➤ Mwau (2015)</li> </ul>  |   |
| Remittances and Growth Nexus                     | <ul style="list-style-type: none"> <li>➤ Worlu &amp; Emeka (2012)</li> </ul>  | <ul style="list-style-type: none"> <li>➤ Makori, Kagiri &amp; Ombui (2015)</li> </ul>  |   |

### Theoretical Framework

The Harrod-Domar model, developed independently by Sir Roy Harrod in 1939 and Evsey Domar in 1946, is a fulcrum of this study. This growth model states that the rate of economic growth in an economy is dependent on the level of savings and the capital output ratio. If there is a high level of savings in an economy, it provides funds for firms to borrow and invest. Investment can increase the capital stock of an economy and generate economic growth through the increase in production of goods and services. The capital output ratio measures the productivity of the investment that takes place. If capital output ratio decreases, the economy will be more productive, so higher amounts of output is generated from fewer inputs. This again, leads to higher economic growth. The model suggests that if developing countries want to achieve economic growth, governments need to encourage saving, and support technological advancements to decrease the economy's capital output ratio.

In a related saving-gap model that explains the growth-aid nexus to support growth in developing economies, Harrod-Domer opines that every economy saves a certain proportion of its income to replace worn-out capital (Hansen & Tarp, 2000). In order to grow, new investment representing net additions to capital stock are necessary. This explained the "capital constraint hypothesis", which justifies the need for transfer of capital as well as technical assistance from developed to Less Developed countries, as Nigeria.

### METHODOLOGY

The study adopted ex-post facto and analytical research designs. The study used secondary data collected from the World Development Indicators, (WDI) and Central Bank of Nigeria Statistical Bulletin. The data covered a time series period of 32 years (1986 to 2017).

The model for the study was an adaptation and modification of the work of James and Ikechukwu (2015) who examined external financing and economic growth in Nigeria. Their model is stated thus:

$$GDPR=f(EDS, FDI, ODA)$$

$$GDPR = b_0 + b_1 EDS + b_2 FDI + b_3 ODA + U_t \quad (1)$$

Where:

GDPR= Annual Growth Rate of Gross Domestic Product

EDS= External Debt Stock

FDI= Foreign Direct Investment

ODA= Official Development Assistance

b<sub>0</sub> = the constant

b<sub>1</sub>- b<sub>3</sub> = the coefficients of the explanatory variables

Ut = Error term

The present model added two more external financing variables (of remittance and foreign portfolio investment) to capture additional external financing channels in Nigeria in one model. The modified model is therefore shown as follows:

$$GDPR=f(EDS, FDI, ODA, RMT, FPI)$$

$$GDPR=b_0 + b_1 EDS + b_2 FDI + b_3 ODA + b_4 RMT + b_5 FPI + Ut \quad (2)$$

Where:

GDPR= Annual Growth Rate of Gross Domestic Product

EDS= External Debt Stock

FDI= Foreign Direct Investment

ODA= Official Development Assistance

RMT= Remittance

FPI= Foreign Portfolio Investment

b<sub>0</sub> = the constant

b<sub>1</sub>- b<sub>5</sub> = the coefficients of the explanatory variables

Ut = Error term

The multiple regression model based on the Autoregressive Distributive Lag (ARDL) method was employed to regress external financing variables on economic growth. The variables were first subjected to preliminary tests including Descriptive statistics and stationarity (unit root) tests and then diagnostic tests to confirm the reliability of the regression results.

## DATA PRESENTATION AND ANALYSIS

**Table 2: Descriptive Statistics**

|              | GDPR      | EDS      | FDI      | ODA      | RMT      | FPI       |
|--------------|-----------|----------|----------|----------|----------|-----------|
| Mean         | 4.394300  | 70.29614 | 3.194390 | 1.141101 | 3.814033 | 0.006986  |
| Maximum      | 33.73578  | 228.3717 | 10.83256 | 8.120039 | 13.04258 | 0.096430  |
| Minimum      | -10.75170 | 4.130980 | 0.652160 | 0.301180 | 0.010418 | -0.001000 |
| Std. Dev.    | 7.152333  | 63.33341 | 2.281805 | 1.674042 | 3.696812 | 0.019309  |
| Observations | 32        | 32       | 32       | 32       | 32       | 32        |

The result of the mean showed that average growth rate of the GDP in Nigeria is 4.3%. This figure is significant and high enough to infer that Nigeria is a growing economy. The maximum and minimum values for the dependent variable (GDP) showed 33.73% and -10.75% respectively. The standard deviation of 7.15% showed that there is a very wide variation in the growth rate of the Nigeria economy. This signifies an unstable economy.

The mean of external debt stock (EDS) indicates that 70% of GDP in Nigeria is affected by the external debt stock. This value is pegged at 3.19% for FDI, 1.14% for ODA, 3.81% for RMT and 0.006% for FPI. The maximum and minimum values for EDS showed 228% and 4.13% respectively. The standard deviation is 63.33%. These values show that external debt stock is very high and generally affected the economic growth rate (GDP) in the country during the period understudy. This implies that Nigeria is heavily indebted. The minimum value however, came in the latter years in Nigeria from 2010 till date - 2017 (see Table 2). This suggests that Nigeria can no longer be ranked among the heavily indebted. The exit of Nigeria from the debilitating Paris and London Club debts in 2006 largely explained this latter trend in the nation's debt profile. Other external financing sources showed a maximum and minimum value of 10.83% and 0.065% for FDI, 8.12% and 0.30% for ODA, 13.04% and 0.01% and 0.09% and -0.001% for RMT and FPI, respectively. These values showed minimal contributions from these sources to Nigeria's GDP.

**Table 3: ADF Test of Stationarity (Intercept only)**

| Variables | At Level    |        | First Difference |        | Order of Integration |
|-----------|-------------|--------|------------------|--------|----------------------|
|           | t-Statistic | Prob   | t-Statistic      | Prob   |                      |
| GDPR      | -4.4466     | 0.0014 | -                | -      | 1(0)                 |
| EDS       | -5.4564     | 0.0002 | -                | -      | 1(0)                 |
| FDI       | -3.4937     | 0.0150 | -                | -      | 1(0)                 |
| ODA       | -3.8885     | 0.0059 | -                | -      | 1(0)                 |
| RMT       | -2.0375     | 0.2701 | -5.8238          | 0.0000 | 1(1)                 |
| FPI       | -5.1495     | 0.0002 | -                | -      | 1(0)                 |

\*5% level of significance, \*\*1% level of significance

The variables used for data analyses were subjected to Augmented Dickey Fuller (ADF) Tests, to determine whether they are stationary series or non-stationary series. The variables were tested for stationarity at "intercept only". The results are presented on Table 3 below. The result on Table 4 revealed that GDPR, EDS, FDI, ODA and FPI are stationary at level 1(0) while



only RMT is not stationary at level but became stationary at its first difference. Thus, the variables in the model are found to be stationary at level 1(0) and at first difference 1(1). This implies that the stationarity of the variables are combinations of level and first difference. The Autoregressive Distributive Lag (ARDL) approach is capable of handling both stationary at level I(0) and at first difference I(1) (Narayan, 2005). Thus, the most suitable tool of analyses is the ARDL test that accommodates both the short and long run trends in testing the relationship between the dependent and independent variables.

**Table 4: Result of the Bound test of long run relationship between economic growth and external financing in Nigeria**

| Sample: 1987- 2017                               |          |          |
|--|----------|----------|
| Included observations: 31                        |          |          |
| Null Hypothesis: No long-run relationships exist |          |          |
| Test Statistic                                   | Value    | K        |
| F-statistic                                      | 4.750731 | 5        |
| Critical Value Bounds                            |          |          |
| Significance                                     | I0 Bound | I1 Bound |
| 5%   | 2.62     | 3.79     |
| 1%   | 3.41     | 4.68     |

In the bound test shown in Table 4, result compared the F-statistics with the critical bound values. The F-statistics is 4.7507. The results showed that the F-statistic is greater than the lower and upper bounds of the critical values at 0.05 levels of significances. This means that there is a cointegration or long run relationship between external financing and economic growth in Nigeria.

**Table 5: ARDL Co integrating And Long Run Form**

| Dependent Variable: GDPR |             |            |             |        |
|--------------------------|-------------|------------|-------------|--------|
| Co integrating Form      |             |            |             |        |
| Variable                 | Coefficient | Std. Error | t-Statistic | Prob.  |
| D(EDS)                   | -0.003234   | 0.061216   | -0.052835   | 0.9583 |
| D(FDI)                   | 0.541355    | 1.069976   | 0.505951    | 0.6179 |
| D(ODA)                   | 0.765932    | 1.199502   | 0.638542    | 0.5297 |
| D(RMT)                   | -1.267655   | 0.873539   | -1.451171   | 0.1608 |
| D(FPI)                   | -22.571800  | 72.019634  | -0.313412   | 0.7569 |
| CointEq(-1)              | -0.730057   | 0.218522   | -3.340879   | 0.0030 |
| Long Run Coefficients    |             |            |             |        |
| Variable                 | Coefficient | Std. Error | t-Statistic | Prob.  |
| EDS                      | -0.137688   | 0.085434   | -4.611626   | 0.0213 |
| FDI                      | 2.806956    | 1.976640   | 8.420064    | 0.0096 |
| ODA                      | 1.049140    | 1.599917   | 0.655747    | 0.5188 |
| RMT                      | -1.736379   | 1.331503   | -1.304075   | 0.2057 |
| FPI                      | 0.917878    | 99.208634  | -0.311645   | 0.7582 |
| C                        | 11.535088   | 6.087702   | 1.894818    | 0.0713 |

Having found the presence of long run relationship between economic growth and external financing variables from result of the Bound Test, further analyses presented in Table 5 above is aimed at explaining the nature of the long run relationship. The results showed that the error correction term [CointEq(-1)] is rightly signed. The coefficient of the error term is -0.730057 with probability value of 0.0030. Since the p.value is less than 0.05, it connotes that the error term is statistically significant. This indicates that changes in economic growth trend will eventually return on a growing normal trend over time. The coefficient indicates that about 73% of the deviations in growth of the economy is due to macroeconomic instability that can be corrected within a year. This implies that external financing variables can be used to stabilise economic growth in Nigeria. This suggests that external financing has a significant policy adjustment effect on economic growth of Nigeria.

**Table 6: Short run model of the relationship between economic growth and external financing in Nigeria**

| Dependent Variable: GDPR |                  |                 |                  |               |
|--------------------------|------------------|-----------------|------------------|---------------|
| Method: ARDL             |                  |                 |                  |               |
| Variable                 | Coefficient      | Std. Error      | t-Statistic      | Prob.*        |
| GDPR(-1)                 | 0.269943         | 0.218522        | 1.235313         | 0.2297        |
| EDS                      | -0.003234        | 0.061216        | -0.052835        | 0.9583        |
| <u>EDS(-1)</u>           | <u>-0.097285</u> | <u>0.069264</u> | <u>-1.404562</u> | <u>0.1741</u> |
| FDI                      | 0.541355         | 1.069976        | 0.505951         | 0.6179        |
| <u>FDI(-1)</u>           | <u>1.507882</u>  | <u>0.868429</u> | <u>1.736332</u>  | <u>0.0965</u> |
| ODA                      | 0.765932         | 1.199502        | 0.638542         | 0.5297        |
| RMT                      | -1.267655        | 0.873539        | -1.451171        | 0.1608        |
| FPI                      | -22.57180        | 72.01963        | -0.313412        | 0.7569        |
| C                        | 8.421267         | 4.047928        | 2.080390         | 0.0493        |

|                    |           |
|--------------------|-----------|
| R-squared          | 0.229014  |
| Adjusted R-squared | -0.051345 |
| F-statistic        | 0.816860  |
| Prob(F-statistic)  | 0.595948  |
| Durbin-Watson stat | 2.014078  |

The short run effect of external financing on economic growth is interpreted based on the coefficients of the explanatory variables, and the coefficient of determination ( $R^2$ ). The statistical significance was confirmed using the t-statistics for the coefficient of regression, and F-statistics for the coefficient of determination. The results show that the coefficient of GDP is 0.27 suggesting positive but insignificant effect on the model at 0.05 level. This implies that GDP is not an endogenous variable in the explanation of external financing influence on growth of Nigerian economy.

The coefficient of the external debt stock variable at level and after one year is -0.0032 and -0.0972 respectively. The coefficients indicate negative relationship between external debt stock and economic growth. However, the corresponding p-values is greater than 0.05 levels indicating an insignificant effect. This indicates that external debt stock does not have a significant effect on economic growth in the short run. For the Foreign Direct Investment (FDI), the coefficient of the regression is 0.541355 within the year and 1.507882 after one year. The values show that FDI has a positive relationship with economic growth in Nigeria. However, the probability value is greater than 0.05 levels. Thus the study concluded that FDI has positive but insignificant short run effect on economic growth in Nigeria. The coefficient of regression for ODA (0.765932) was found to have positive relationship with economic growth. The p-value (0.5297) is greater than 0.05 and thus does not show a significant short run effect on economic growth in Nigeria. The coefficient of regression for Remittance is -1.267655 indicating negative relationship, and the p-value is 0.1608. Since the p-value is greater than 0.05, the study concluded that remittance had a negative and insignificant short run effect on economic growth in Nigeria. The coefficient of regression for Foreign Portfolio Investment (FPI) is -22.57180 with a probability value of 0.7569. Since the p-value is greater than 0.05, the study concluded that FPI had a negative relationship but insignificant short-run effect on economic growth in Nigeria.

Despite the fact that all the variables of external financing studied were not statistically significant in the short run, the constant (8.421267) is positive and statistically significant at 0.0493. This indicates that the use of external financing attracted a significant positive effect on the growth of the economy. These positive effects were generated from or spurred by other variables not included in this model. The coefficient of determination is 0.2290 indicating a 23% explanatory power. This suggests that about 23% of changes in economic growth rate in Nigeria are accounted for by external financing. Thus, about 77% were not explained in this model. This implies that external financing does not have a strong explanatory power on the growth of Nigerian economy within the period under study. The F-statistics being 0.816860 confirmed this assertion with an insignificant probability value of 0.5959. On the whole this connotes that external financing is not a panacea to short run economic growth challenges in Nigeria. The Durbin Watson value of 2.01 supported the reliability of the model from which the results were obtained. Further diagnostic tests were carried out subsequently.

### Diagnostic Tests

#### Multicollinearity Test

**Table7: Test of multicollinearity of the explanatory variables in the model.**

| Variance Inflation Factors |                      |                |              |
|----------------------------|----------------------|----------------|--------------|
| Sample: 1986 2017          |                      |                |              |
| Included observations: 31  |                      |                |              |
| Variable                   | Coefficient Variance | Uncentered VIF | Centered VIF |
| GDP(-1)                    | 0.047752             | 2.132994       | 1.522572     |
| EDS                        | 0.003747             | 10.45505       | 3.289948     |
| EDS(-1)                    | 0.004797             | 12.47101       | 4.69854      |
| FDI                        | 1.144849             | 11.30589       | 3.623975     |
| FDI(-1)                    | 0.754169             | 7.447812       | 2.387169     |
| ODA                        | 1.438804             | 3.747214       | 2.513084     |
| RMT                        | 0.763070             | 7.75658        | 2.324645     |
| FPI                        | 5186.828             | 1.379555       | 1.211854     |
| C                          | 16.38572             | 10.29898       | NA           |

Presence of high multicollinearity, causes the confidence intervals of the coefficients (tend) to become very wide and the statistics tend to be very small, making the hypothesis testing to be misguided. Presence of multicollinearity is tested using the Variance Inflation Factor (VIF). The **Decision Rule**: "if any of the VIFs exceeds 10 (or 5), it is an indication that the associated regression coefficients are poorly estimated because of multicollinearity" (Ranjit, 2006).

From the results of the VIF, none of the variables has a centred VIF above 5. This indicates that there is no presence of multicollinearity of the model. Thus it can be said that the results of the coefficients are true to the relationship of the model.

**Serial Correlation Test****Table 8: Breusch-Godfrey Serial Correlation result of the models**

| Breusch-Godfrey Serial Correlation LM Test: |          |                     |        |
|---|----------|---------------------|--------|
| F-statistic                                 | 0.072057 | Prob. F(2,20)       | 0.9307 |
| Obs*R-squared                               | 0.221778 | Prob. Chi-Square(2) | 0.8950 |

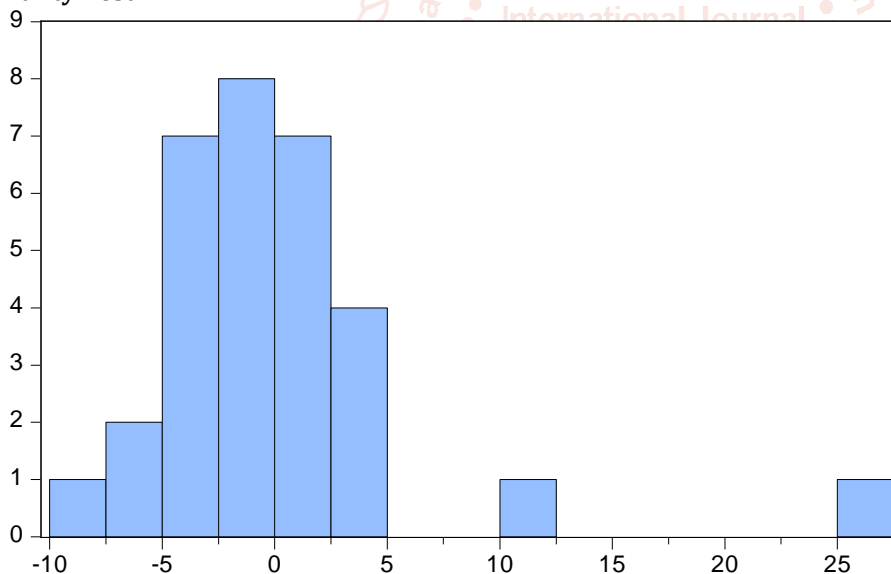
The presence of correlation of time periods will lead to serial correlation which will have huge effect on the reliability of model estimation. It may lead to high significant value, inefficient estimation, exaggerated goodness of fit and false coefficient of regression sign (positive or negative). The presence of serial correlation is tested using the Breusch-Godfrey Serial Correlation LM Test. The null hypothesis is no presence of serial correlation. The decision rule is to reject the null hypothesis if the p. value is less than 0.05 level of significance. From the result, the p.value is greater than 0.05. The study thus concluded that there is no serial correlation (of time series) in the model. This confirms that the nature of the relationship (negative or positive) as found in the estimation from the ARDL is correct and true of the model characteristics.

**Heteroskedasticity Test****Table 9: Test of heteroskedastic of the model**

| Heteroskedasticity Test: Breusch-Pagan-Godfrey |          |                     |        |
|--|----------|---------------------|--------|
| F-statistic                                    | 0.182790 | Prob. F(8,22)       | 0.9909 |
| Obs*R-squared                                  | 1.932115 | Prob. Chi-Square(8) | 0.9830 |
| Scaled explained SS                            | 5.401109 | Prob. Chi-Square(8) | 0.7140 |

Source: Eviews 9 output on Appendix 4

Presence of heteroskedasticity implies that the coefficients estimated from the regression analyses will be a biased one. The null hypothesis is that the residuals are homoskedastic and the alternate hypothesis is that the residuals are heteroskedastic. The decision rule is to reject the null hypothesis if the p.value is less than 0.05 level of significance. From result, the p.values of the model is greater than 0.05, revealing that the model does not have heteroskedastic at 5% level of significance. The conclude that there is no heteroskedastic in the model. This confirms that the result obtained from the estimated model is not a biased value.

**Normality Test**

Series: Residuals  
Sample 1987 2017  
Observations 31

Mean -1.07e-16  
Median -0.838529  
Maximum 25.72924  
Minimum -8.176310  
Std. Dev. 6.014053  
Skewness 2.615956  
Kurtosis 12.10089

Jarque-Bera 142.3406  
Probability 0.000000

**Figure 1: Graphical presentation of normality of the distributions from the estimation model.**

Lack of normal distribution implies that the results cannot be used to make future predictions about the economy. Jarque-Bera is a test statistic for testing whether the series is normally distributed. The null hypothesis is that the variables are normally distributed. Decision rule is to reject when p.value is less than 0.05 level of significance. The Jarque-Bera statistics of 142.3406 has probability value of 0.000, which is less than 0.05, leading to rejection of the null hypothesis that the residuals is normally distributed. This means that the residuals do not have normal distribution, and thus the results cannot be used for prediction of future effect of external financing on economic growth of Nigeria.

**Regression Specification Error Test (RESET)****Table 10: Ramsey RESET:**

| Omitted Variables: Squares of fitted values |          |         |             |
|---|----------|---------|-------------|
|   | Value    | df      | Probability |
| t-statistic                                 | 2.537727 | 21      | 0.00964     |
| F-statistic                                 | 2.289150 | (1, 21) | 0.00964     |

The ARDL regression was based on the assumption of linear relationships. Presence of nonlinear relationship will produce unreliable regression results. The *Ramsey Reset test* is employed to identify the existence of any significant non-linear relationships in the developed linear regression model. The p. value is less than 0.05 level, and rejected the null hypotheses of non-linear relationships in the model. Thus the model used for this study is well specified and good for the estimation of the effect of external financing on economic growth of Nigeria.

### Discussion of Findings

The study has shown that all the external financing variables (including external debt, foreign direct investment, official development assistance, remittance and foreign portfolio investment) do not have significant effect on economic growth in the short run. The results further showed that external financing variables could not explain as high as 77% of the changes in economic growth in Nigeria. More so, external financing will not have effect on the Nigerian economy within a short term period. These results connote that external financing is not a veritable tool for short run economic planning in Nigeria. This is expected because the major reason for external financing is for long term capital projects. In Nigeria, external financing is known for many capital projects such as railway construction and maintenance, airport as well as long term agricultural projects.

The coefficients of long run ARDL model showed that external financing has 73% adjustment speed on economic growth of Nigeria. This implies that external financing can be used for long term economic stabilisation in Nigeria. However, results further revealed that only external debt stock and FDI could significantly influence economic growth in the long run in Nigeria. While external debt stock showed a significant negative effect; FDI revealed significant positive effect on economic growth. The results imply that external financing through debt/borrowing depleted the nations GDP while FDI boosted growth in Nigeria. Other external financing tools including the ODA, FPI and remittance do not have significant effect on economic growth. This implies that funds obtained from ODA, FPI and Remittance (RMT) over the years had not significantly affected economic growth in Nigeria between 1986 and 2017.

From the results, the only theoretical compliance or relevance is the significant positive effect FDI had on economic growth. The results equally supported the findings from a number of external financing studies in Nigeria. The works of Oyatoye, *et al* (2011), Ugwuegbe, Modebe, Onyeonu (2014), Okon, Augustine and Chuku (2012), Awolusi (2012), Olusanya (2013), Ogunleye (2014), Otto and Ukpere (2014) and Shuaib and Dania (2015) all posited that FDI led to economic growth. However, these studies also asserted that FDI also triggers short run growth. The present study found that FDI could not bring about growth in the short run, if not for anything, the projects financed by FDI are industrial productions that only yields returns in the long run. This makes the ARDL results a more robust and explicit explanation of external financing and growth nexus for Nigeria.

### Conclusion and Recommendations

External financing variables can be veritable tools for long run economic planning for a developing country like Nigeria. However, the use of external financing, especially, external debt, foreign direct investment, official development assistance, remittance and foreign portfolio investment, for short run economic challenges would be counterproductive

because these external financing variables do not have significant positive effect on economic growth in the short run model. Specifically, external debt stock in Nigeria do not contribute to economic growth while FDI can be a reliable economic policy instrument for boosting long term planning for economic growth and sustainability in Nigeria.

Since external debt stock has a negative effect on growth in Nigeria, the government should rather ensure that they are judiciously channelled towards projects that are regenerative that would in the long run offset the cost of such debt, the accruing interest and other debt associated costs. It is equally good that the government attract FDI into Nigeria by creating an enabling macroeconomic environment that would attract investors particularly in the real sectors of the economy. It is also recommended that a flexible exchange rate policy be adopted by the government so as to capture the real quantum of remittance into the country. Perhaps this could reverse the negative trend and effect on growth by remittance as shown from the result of the analysis in this study. Furthermore, the government should strengthen and boost the performance of the Nigerian capital market to attract foreign portfolio investment. This is important because the growth of capital market in any economy is key to the development of its real sectors – industrial and agricultural.

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